MAXEYE TECHNOLOGIES

DVB-T2 Analysis Toolkit
Data Sheet

An ideal solution for SFN network planning, optimization, maintenance and Broadcast Equipment Testing

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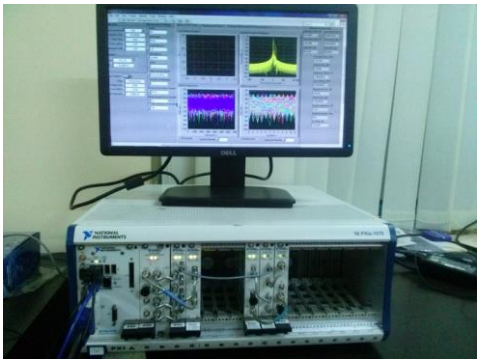

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Contents

1. Overview

MaxEye Technologies provides signal analysis functions in LabVIEW for analyzing the standard complaint signals for various digital video broadcasting standards. **Toolkit returns standard based demodulation and spectral measurements for analyzing the quality of the received signal.**

This document contains information about DVB-T2 analysis toolkit features and supported measurements

2. DVB-T2 Analysis Toolkit

2.1. Technical Description

The MaxEye Digital Video Broadcasting Analysis Toolkits extends LabVIEW tools and functions with National Instruments Vector Signal Analyzer (NI VSA), Vector Signal Transceiver (NI VST) and NI USRP to analyze digital video broadcasting test signals that confirm to their respective standard specifications for various standards. Table 1 gives the details of the standard specifications for each of the supported standard.

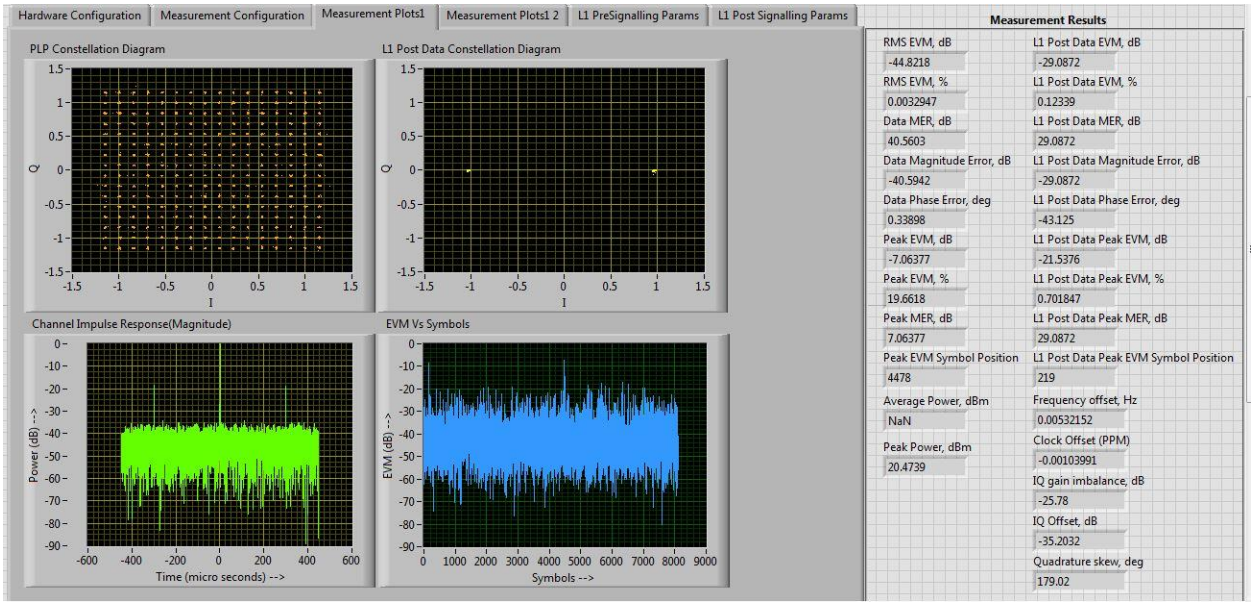
The toolkit coding, modulation and other parameters can be easily configured using the LabVIEW API VIs to analyze custom waveform for specific test requirements.

Table 1 Digital Video Broadcasting Standard Specifications

Sl.no	Standard Name	Specifications
1	DVB-T2	**ETSI EN 302 755 V1.2.1 (2011-02)** Digital Video Broadcasting (DVB); Frame structure channel coding and modulation for a second generation digital terrestrial television broadcasting system (DVB-T2)

2.2. Overview

The Digital Video Broadcasting – Second Generation Terrestrial (DVB-T2) Analysis Toolkit extends LabVIEW tools and functions with NI VST (NI 5644R/5645R/5646R), NI VSA (5663/5663E/5665/5661) and NI USRP to analyze DVB-T2 signals that conform to the standard specifications. This toolkit offers standard based test solution for designing, evaluating and manufacturing Digital video broadcasting-terrestrial (DVB-T2) equipment. DVB-T2 is the European based consortium standard for broadcast transmission of digital terrestrial television.



The DVB-T2 analysis toolkit provides standard based modulation accuracy, transmit power, IQ Impairments, SFN and spectral measurements to enable engineers for evaluating, designing, manufacturing DVB-T2 transmitters, amplifiers, tuners, repeaters, modulators and gap-fillers. Toolkit provides various measurement traces to enable engineers to analyse, troubleshoot and validate the transmitter signal issues. The toolkit measurements can be used to calibrate the DVB-T2 transmitter components. The EVM vs Subcarriers and EVM vs Symbols enable the time and frequency domain analysis of the transmitted signal to identify the issues in the transmitted signal. The channel frequency response trace gives the spectral flatness of the RF Front end.

All over the world, DVB networks are replacing the analog video broadcasting and most of the DVB networks are based on Single Frequency Networks (SFN). A SFN network is a broadcast network where multiple transmitters transmit the same signal in same frequency channel. SFN is used for efficient utilization of the radio spectrum, to allow more number of video services

compared to traditional multi-frequency network (MFN). It also increases the coverage area. The radio receiver receives the multiple echoes from different transmitters and it can be considered as a severe form of multipath propagation. This results in frequency selective fading and inter-symbol interference (ISI). The DVB-T2 standard allows guard interval to allow various echoes. All the echoes should be limited within the Guard Interval period, this requires proper planning and maintenance of the SFN network. MaxEye DVB-T2 analysis toolkit provides SFN measurements with the power and delay of the each transmitter path. These measurements are ideal for the SFN network planning, maintenance and optimization.

2.3. Key Features and Specifications

The following section has key features and measurements supported in the DVB-T2 signal analysis toolkit.

1. Test DVB-T2 Broadcast Devices, SFN Network Monitoring, Planning and Performance analysis.

2. Modulation Accuracy (MER, EVM, Freq. and Clock Offset) and Spectral Measurements (CHP, ACP and SEM)

3. SFN (Channel Impulse Response, Path Delay and Path Power) and IQ Impairment measurements

4. Supported on NI PXIe-5663E, 5665, 5644R/5645R/5646R(VST), NI USRP-2920/2921/2922/2930/2932 etc.,

5. Measurement Traces: Constellation, EVM/MER vs Symbols/Subcarriers, Channel Freq and Impulse Response

6. Programming API in NI LabVIEW, Programming Examples and Documentation for all the APIs

DVB-T2 Specific	Supported Configurations
Version	1.3.1
DVB-T2 Mode	Multiple PLP
Bandwidth	1.7Mhz, 5Mhz, 6Mhz, 7Mhz, 8Mhz and 10Mhz
Modulation	OFDM
Carrier Mode	Both Normal and Extended
FFT Size	1K, 2K, 4K, 8K, 16K and 32K
PLP Data Modulation Format	QPSK, 16QAM, 64QAM and 256 QAM
L1 Post Data Modulation Format	QPSK, 16QAM and 256 QAM
L1 Pre Data Modulation Format	BPSK
Guard Interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128 and ¼ of the FFT Size.
Scatter Pilot Pattern	PP0, PP1, PP2, PP3, PP4, PP5, PP6, PP7 and PP8.
Forward Error Correction (Combined BCH + LDPC Rate)	½, 3/5, 2/3, ¾, 4/5 and 5/6.
Number of FEC Blocks	User Configurable.
PLP Data Frame Type	Both Long and Short.
Constellation Rotation	Supported.
MIMO Support	Only SISO.
Stream Mode	Supports both Normal and High Efficiency Mode.
Time Interleaving Type	All combinations supported
Measurements	
Demodulation Measurements	**Error Vector Magnitude** Data EVM Pilot EVM Peak EVM **Modulation Error Ratio** Data MER Pilot MER Peak MER **RMS Magnitude and Phase Error** **Power Measurements** Average Power Peak Power **Frequency Offset** **Clock Offset** **Gain Imbalance** **Quadrature Skew** **IQ Offset** **L1 and L2 Signalling Parameters decoding** **Spectral Flatness** **Measurement Traces** Constellation Graph Channel Frequency Response EVM Vs Subcarriers EVM Vs Symbols MER Vs Subcarriers MER Vs Symbols
SFN Measurements	**Channel Impulse Response** **Relative Path Delay** **Relative Path Power**
Spectral Measurements	Center Channel Power

	Adjacent Channel Power
	Spectral Emission Mask
	Spectral Mask Margin
Common Toolkit Features	
Labview API	The toolkit properties are configured using the Set/Get LabVIEW API Vis. All API VIs has documentation support and Icons.
Programming Examples	Programming Examples to help users using the LabVIEW API VIs

3. Software Maintenance and Support

MaxEye offers cost effective software maintenance and support for your application development and automated test environment with free software upgrade for all the supported features of the toolkits. MaxEye offers technical support through our engineers who are domain experts in the digital video broadcasting test solutions. For more details about our support program please contact us at info@maxeyetech.com.

For Pricing and Other information please contact us

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